

**What is Claimed Is:**

1. In an optical amplifier having an input signal and an output signal, a method of controlling gain tilt comprising the steps of:

determining power tilt characteristics for the input signal; and

5        adjusting an attenuator loss such that the gain tilt is appropriately controlled.

2. The method according to claim 1 in which the attenuator loss is increased when a positive power tilt is determined to be characteristic of the input signal.

10       3. The method according to claim 1 in which the attenuator loss is decreased when a negative power tilt is determined to be characteristic of the input signal.

4. The method according to claim 1 in which the optical amplifier is a multi-stage erbium-doped fiber amplifier and the attenuator is a variable attenuator  
15       positioned within a mid-stage of the multi-stage amplifier.

5. A method of controlling a gain tilt characteristic of an erbium-doped fiber amplifier, the amplifier comprising:

an input port for receiving optical signals that are to be amplified;

20       a first stage of amplification in optical communication with the input port, the first stage of amplification including an erbium-doped optical amplifying fiber;

a second stage of amplification including an erbium-doped optical amplifying fiber;

25       an output port in optical communication with the second stage of amplification for outputting signals amplified by the second stage; and

a variable attenuator interposed between and in optical communication with the first stage of amplification and the second stage of amplification;

the method comprising the steps of:

5       introducing an optical signal into the input port;  
determining a power tilt characteristic for the input optical signal; and  
adjusting the variable attenuator loss such that a desirable gain tilt is  
obtained.

6. The method according to claim 5 wherein the attenuator loss is increased  
10   when a positive power tilt is determined to be characteristic of the input signal.

7. The method according to claim 5 wherein the attenuator loss is  
decreased when a negative power tilt is determined to be characteristic of the  
input signal.